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ABSTRACT

This paper presents a system for examining use of school audiovisual equipment in terms of objective parameters. The technique was developed to assist administrators and teachers in planning audiovisual equipment needed to support particular projects. The influence of teaching style and teacher and student equipment preferences are considered. Through the use of index ratios assigned according to the (1) number of teachers and (2) number of students in a school, and multiplying by a factor for each type of equipment, a base figure for each type of equipment is obtained. Tables for the ratios and indexes are included. Policies for using the base figures are discussed. Nine case studies from schools in various socioeconomic areas contain a brief description of the area, graphs showing use of equipment, deficiencies below the norm (base figure) and excesses above the norm. (JAB)

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PLANNING AND EVALUATING USEAGE OF A.V. EQUIPMENT IN SCHOOLS

by

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PLANNING AND EVALUATING USEAGE OF A.V. EQUIPMENT IN SCHOOLS

C.W. DUNNETT ET AL

In order that new schools may be adequately equipped with a balanced array of audio visual hardware, administrators are frequently called upon to devise some form of "Equipment Issue Scales". In other situations principals of established schools may wish to expand their stock of equipment to support particular projects. These problems are further complicated by the wish of many administrators and educationalists to evaluate the use of existing and proposed equipment in terms of the equipment actually needed to meet the problem.

Equipment issued to a school could either influence the style of teaching or, conversely, the style of teaching and the particular likes or dislikes of the teaching staff could influence the useage, and hence the demands, for particular equipment.

In the former case (of equipment stock determining teaching style), a school equipped with many listening posts and carrels with individual equipment would tend to provide situations oriented towards individualised instruction and small group learning. (The alternative in this case would clearly be to conduct conventional classes with the equipment, which is not suitable for large group use, lying idle in a cupboard). In an example of teaching style influencing useages, a teacher very interested in the use of movie film could expand the use of Super 8 equipment, both for creative film making and as an instructional aid in many curriculum areas. A consequent problem might be the forced useage of a medium which may not be suited to the problem.

There is a clear need for a technique to allow administrators, principals and teachers to examine the A.V. equipment that the school possesses in terms of some objective parameters. These parameters are not to be treated as absolute definitive norms, but would be useful as empirical levels against which the equipment in a particular school can

be measured in terms of types and quantity. It was to this end that we developed the following approach.

Each school is allotted two index ratios, one being proportional to the number of teachers in the school, the other being proportional to the number of students. To supplement these, we developed a factor for each type of equipment. By multiplying each equipment factor by the school's teacher index ratio or student index ratio, we obtain a base figure for each type of equipment. (The teacher index ratio is used when dealing with teacher oriented items such as video tape recorders, and the student index ratio for individualised student-oriented items such as headphones). The "base" figure for each item indicates the number of pieces of that particular type of equipment which could be regarded as a datum level for that situation - a datum level against which other schools' useage and issues can be compared.

Thus, if the factor for overhead projectors is 1.2 and a school with 24 teachers has a teacher index ratio of 6, then one would expect the school to have 7 projectors (approximately 6 x 1.2).

It should be emphasised that these figures are not directly aimed at producing a precise number of pieces of needed equipment. Rather we aim at producing a base level against which existing and future stocks and useage can be related, and, more particularly against which the needs and uses of other schools can be compared. In the case studies included with this paper several specific school situations in South Australia have been examined, based on their equipment returns at the end of 1975. These case studies illustrate typical situations which differ considerably. The relationship between actual equipment held and the equipment base graphs that are illustrated should be a means for planners and principals to gauge equipment useages and needs if they wish the style of education and teaching to proceed in the manner described for

that particular area. It can be seen that a particular style or manner of education influences, in specific ways, the amount of equipment held.

One consequent policy would be to equip each school to the base standard according to the school's teacher and student index ratios. This would provide an across-the-board selection of A.V. equipment for each school to be further developed or expanded in any particular direction desired by the school's administration. However, it would be equally feasible, in consultation with the administration, to decide in advance on the intended teaching styles of the school and to influence the base issue accordingly.

A policy could be made regarding overall issues of equipment such as overhead projectors. If the policy was to equip to a base standard and then to gradually expand the degree of application of such equipment a gradual increase in the equipment factor could be progressively made. This increase would highlight the expanded demands and shortfalls could be continuously met until such time as all schools were equipped to the new indexed levels. The major value of this investigation lies in a close analysis of the case studies which follow. For it is in these demonstrated situations, where known styles of leadership and educational administration and practice exist, that the related equipment stocks which support such administrations can be closely compared and related to others.

The conclusions drawn attached to each situation illustrated are entirely our own and crossrelate to several known local socioeconomic parameters. It may well prove necessary in other situations to modify the findings or arguments according to somewhat different socioeconomic parameters.

The rationale by which the equipment index graphs relate to the

base graph is a strong one and it must be one of the few methods by which equipment issues and scales can be visually and graphically related, rather than by mere lists of numbers of items of requirement as detailed in such references as "Standards for school media programmes" (American Library Association and National Education Association, Chicago, 1969).

Our proposed system allows many comparisons and adjustments to be made without leading to a specific issue of a specific set of equipment being made in a manner unrelated to the present and future teaching needs of the school.

The factors which are listed in Table A include those for teacher oriented equipment and for student oriented equipment.

TABLE A

TEACHERS	Factors
*Radio	.40
Movie Projector 16mm (with stand)	.40
Movie Projector 8mm	.25
Screens (portable)	.45
V.T.R.	.40
T.V. Monitor Rec/Monitor	.45
O.H.P.	1.2
35mm Projector (auto)	.45
35mm Projector F.S./slide	.25
Cassette Recorder	.70
Record Player Stereo	.25
Epidiascope	.25
Reel-reel Tape Recorder	-
Video Camera	.25
Portable P.A.	-

STUDENTS	Factors
Projectors 35 (small)	4
Listening Posts	1
Cassette Recorder	1.5
Cassette Player	4
Slide Viewer	4
Language Master (card reader)	1
Daylight Screens (folding)	1.5
Headsets	6

*Note: This does not take into account the built-in radio which all schools would have fitted to their Public Address distribution system.

The graphs which produce the index ratios are reproduced as Table B and Table C.

Table B and Table C about here

In order to produce the datum level needed the index (for teachers or students) is simply multiplied by the respective factor:-

e.g. if a school with 15 teachers needs guidelines for the provision of overhead projectors, Table A gives a factor 1.2 and the graph on Table B gives an index of 6

.. 1.2 x 6 = 7.2 or approximately 7 projectors is the datum figure.

In order to compare the various situations in schools of different sizes, the case study graphs plot the expected factor, together with the actual equipment stock held, having first divided the latter by the index ratio. This in effect compares the actual factor held with the factor suggested and provides a direct comparison for all schools.

The schools compared are anonymously recorded, but are all actual situations, broadly described at the heading to each case study.

SOME GENERAL NOTES TO ACCOMPANY THE CASE STUDIES

T.V. and Radio

Adelaide has 8 radio stations -

3 A.B.C. (2 A.M., 1 stereo F.M.) 4 commercial and 1 listener-funded (operated by the University) which has "air time" for access programmes.

There are also 4 T.V. stations -

1 A.B.C., 3 commercial.

Formal educational broadcasts are transmitted only via the A.B.C. network.

A.B.C. Australian Broadcasting Commission (public, funded by parliamentary grants; non-commercial)

S.T.A. State Transport Authority

Distances

Measured from capital city centre.

Schools

The terms "secondary" and "high" are synonomous.

S.A. Government is integrating all technical high schools into the high school "network" - thus all post-primary schools "secondary".

Years 1-2	junior primary	sometimes combined under title "primary"	sometimes combined in country as "area school"
Years 3-7	Primary		
Years 8-12	secondary		

REFERENCE

AMERICAN LIBRARY ASSOCIATION/NATIONAL EDUCATION ASSOCIATION (1969) "Standards for School Media Programs". Published by the American Library Association, Chicago, and the National Education Association, Washington.

TABLE B

SCHOOL / TEACHER INDEX RATIO

(For Teacher oriented equipment)

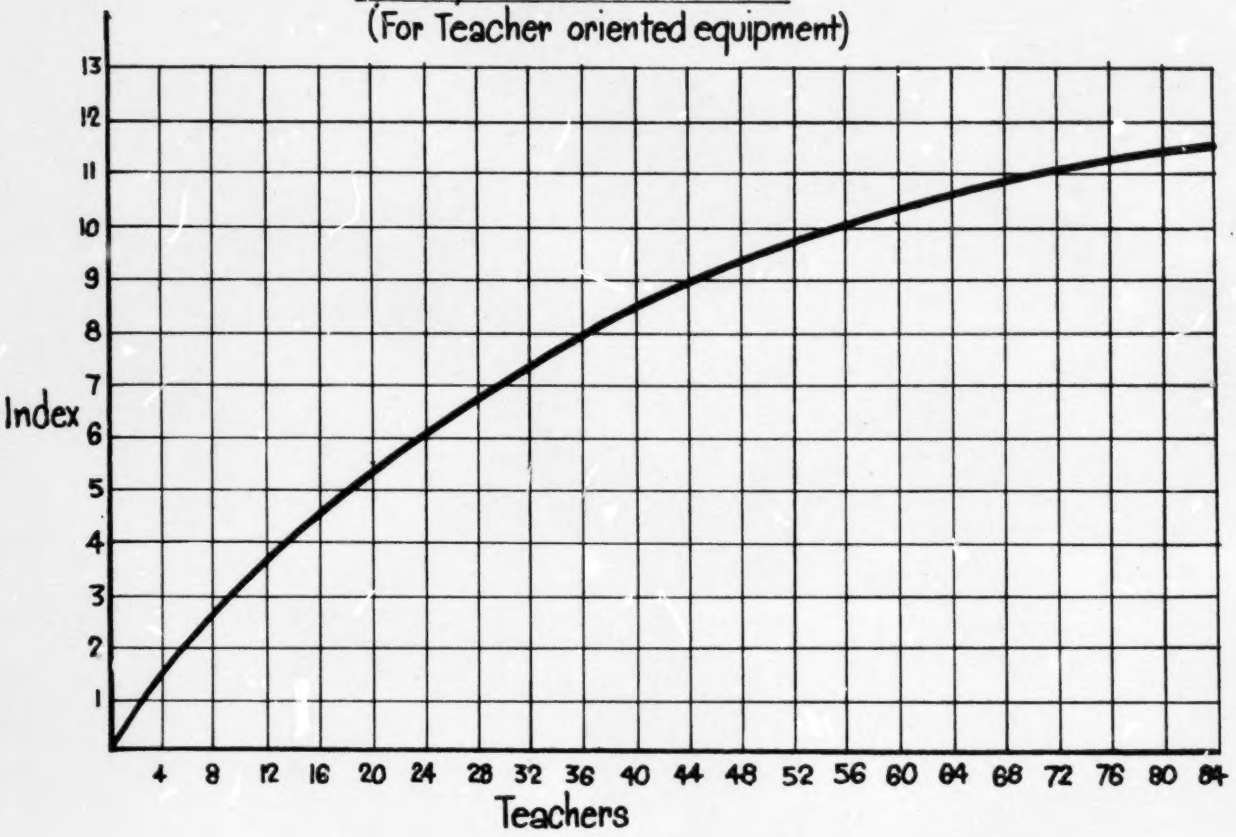
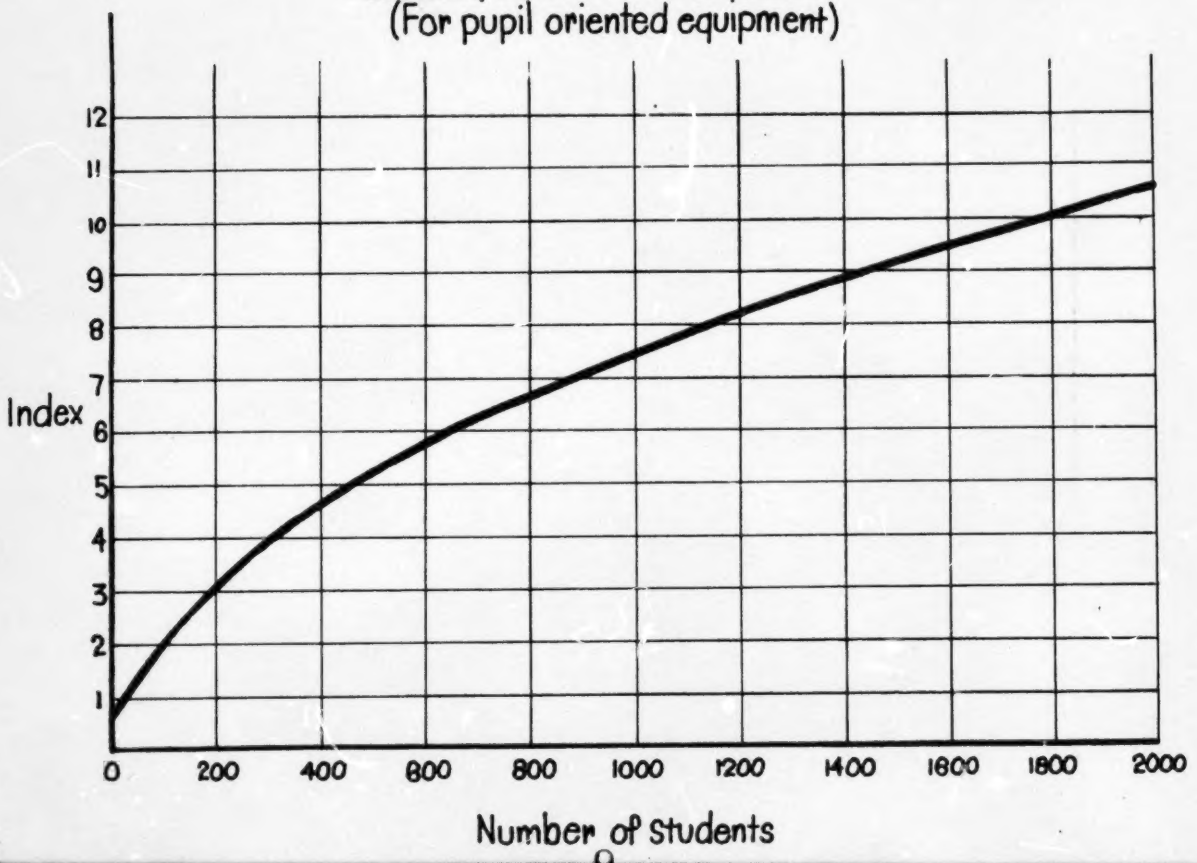


TABLE C

SCHOOL / STUDENT INDEX RATIO

(For pupil oriented equipment)

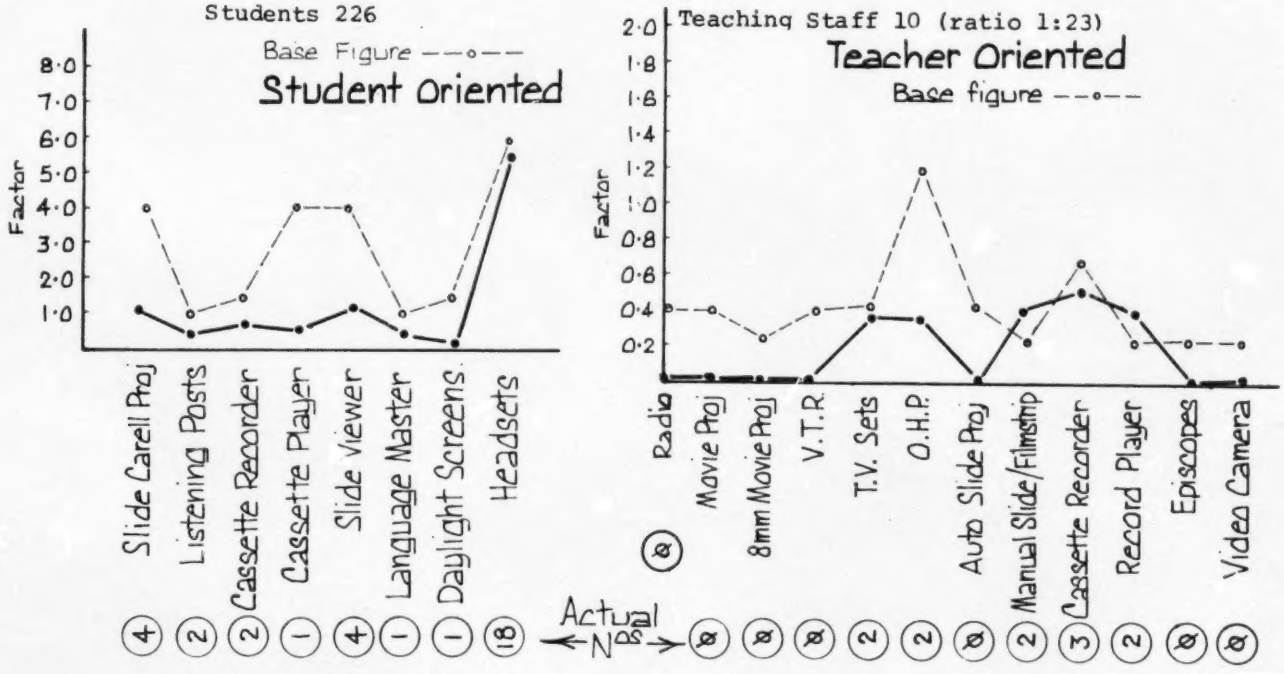


CASE STUDY A

A country town's Junior Primary School

240 km from Adelaide

District: Socio-economically disadvantaged. High percentage of immigrants (Mainly from Italy and Greece) and high number of Australian-born children of immigrants. Many bilingual children. Main industry:- fruit growing. District relies on sales thereof. Income not consistent throughout year. Two radio (1 A.B.C., 1 commercial). Commercial radio station has two hours weekly in the Greek language. Sport follows ethnic lines (soccer has teams sponsored by migrant groups). No Italian language broadcast. Station willing but has not been approached.



Deficiencies Below Norm

Carrel projector, listening posts, cassette recorders & players, slide viewers, language masters, daylight screens, headphones (marginally below).

Radio, 16mm & 8mm motion picture proj., V.T.R., T.V. receivers, O.H.P., 35mm projectors (auto), cassette recorders, epidiascope, video camera.

Excesses Above Norm

Nil.

35mm projector, stereo record players.

Comments

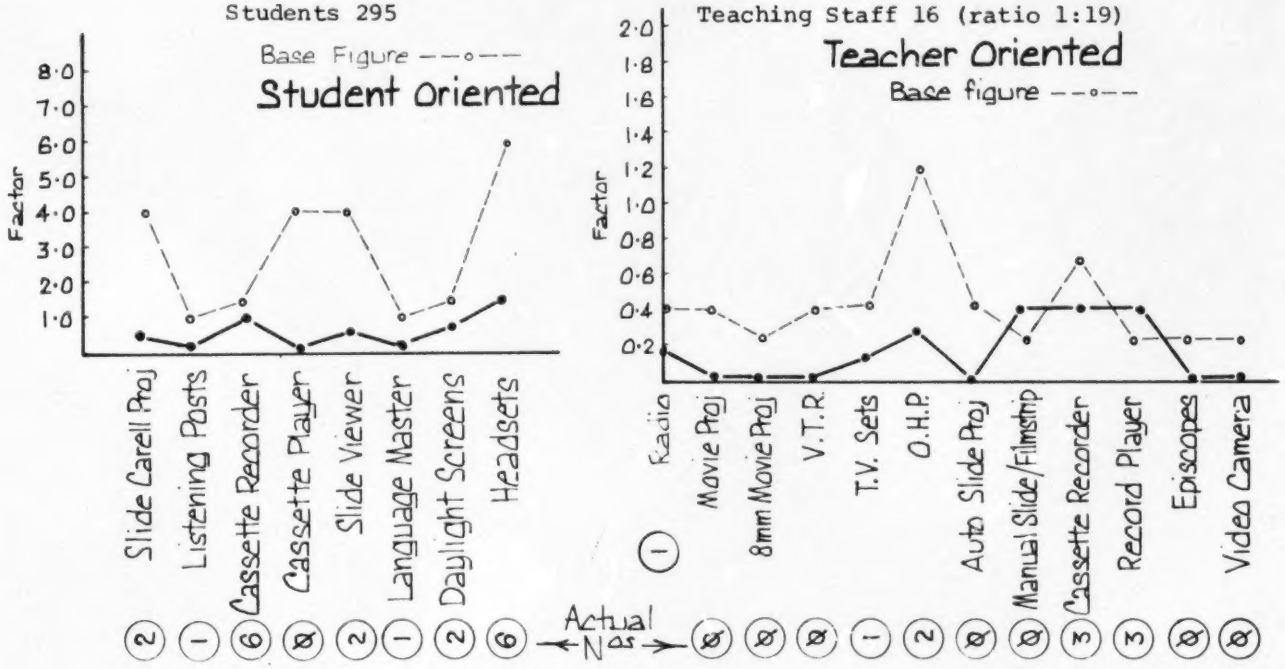
1. Apparent little use of local A.B.C. 3rd network radio station.
2. Low number of O.H.P.
3. Adequate number of headphones: limited number listening posts & ancilliary equipment for student use.
4. Small number of projectors show low demand for slides or few in resource centre.
5. Material used by large number of classrooms - sharing.
6. Possible ineffective use of T.V. "off-air" broadcasts over A.B.C.
7. Surprising low number of language masters (1) considering proportion of bilingual children and of children who speak English only at school.

CASE STUDY B

Metropolitan Junior Primary School
Inner suburban school in old section of Adelaide's metropolitan area.

3 km from Adelaide

District: Many European immigrants (Italian) and Australian-born children of immigrants. Bilingual children.
Local foreign-language shops; capital city has ethnic-access radio; foreign language newspapers. 7 other radio stations with a limited number of ethnic programmes. Strong soccer support.



Deficiencies Below Norm

All categories.

Radio, 16mm & 8mm projectors, V.T.R., T.V. sets, O.H.P., 35mm projectors (auto), cassette recorder, epidiascope, video camera.

Excesses Above Norm

Nil.

35mm projector, stereo record players.

Comments

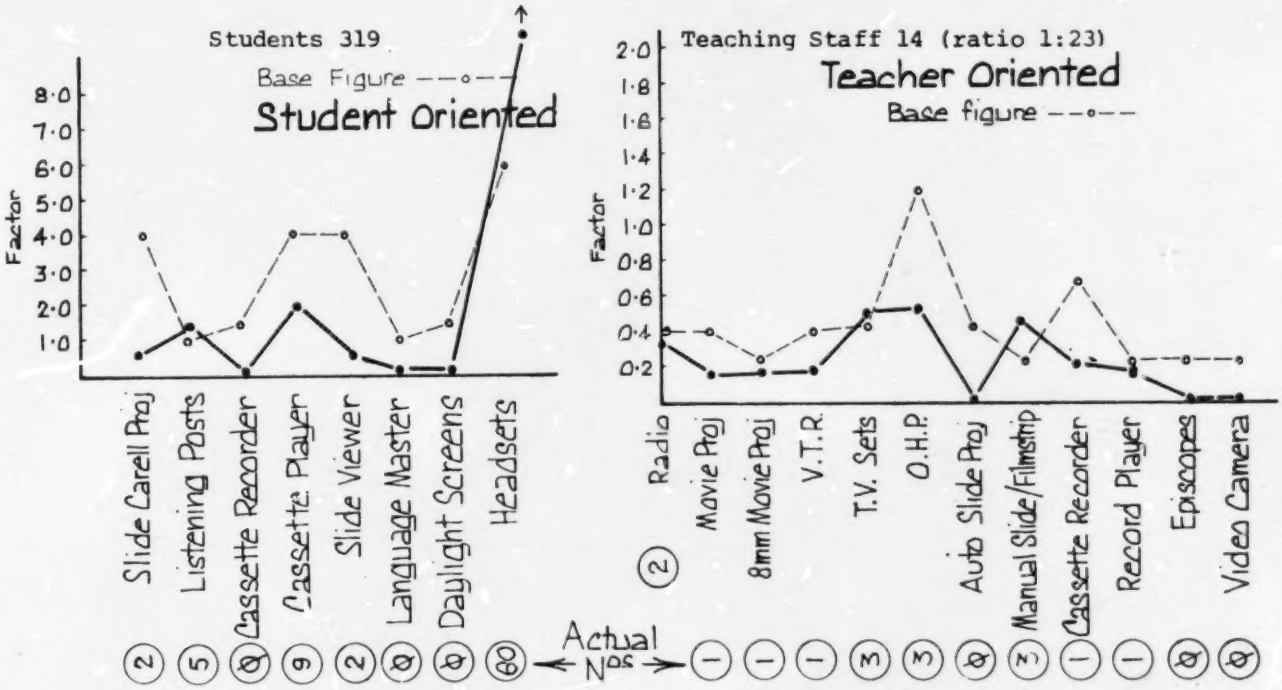
1. Children have very little use of the few available resources.
2. Very few headphones; ancilliary equipment sparse - no bias towards any specific medium/stimulus.
3. No use of 16mm films.

CASE STUDY C

Metropolitan Primary School
Situated in a "middle class" area

8 km from Adelaide

District: Metropolitan suburb of Adelaide. Well served by public transport (bus). Area not as "well off" as public generally believes. School has recently had supplied an open plan classroom. Suburb is residential. Many shops. Hotel 2 km distant from Post Office. Golf course patronised primarily by people from out of the district. Close to Airport.



Deficiencies Below Norm

35mm "Hanimettes", no cassette recorders, cassette players, slide viewers, no language masters (may not be needed)*

Radio, 16mm & 8mm projectors, (marginal), V.T.R., O.H.P., no 35mm auto projectors, cassette recorders, stereo record players, no epidiascope or video camera.

* (usually equated with remedial classes)

Excesses Above Norm

Listening posts (marginal), headphones (well above).

T.V. sets (marginal), 35mm manual projectors.

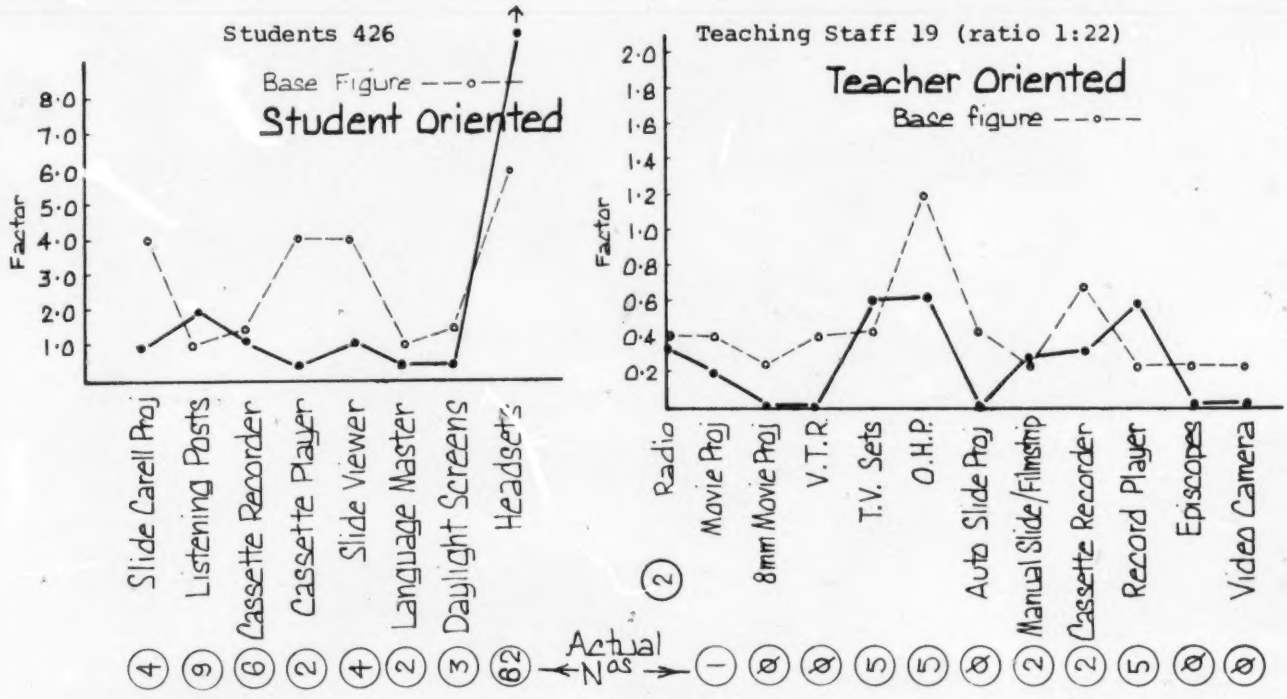
Comments

1. Appears to suggest "class sessions" of slide "shows".
2. High number of headphones appears to indicate each class may possess a set but would have to rely on a sharing of cassette players/recorders.

CASE STUDY D

Metropolitan Primary School
Industrial and working class housing area.
School shows signs of wear and tear more acutely than others of similar age.
9 km from Adelaide

District: Metropolitan and industrial; many trucking businesses, service-type shops proliferate (chicken shops; fish and chips); high level of vandalism and minor crimes; depressed area; high turnover of staff in school; well served by public transport (bus); suburb on main arterial transport route; area looks dirty and gives run-down impression.



Deficiencies Below Norm

35mm projectors, cassette recorders (marginally), cassette players, slide viewers, language master, daylight screen.

Radio, 16mm projector, no 8mm equipment, V.T.R., 35mm auto projectors, epidiascope, video camera; cassette recorders.

Excesses Above Norm

Listening posts, headphones.

T.V. sets, stereo record players.

Comments

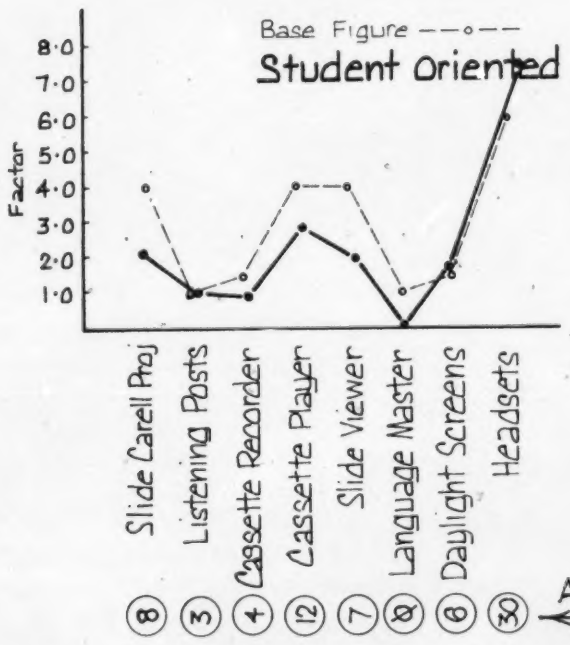
1. Good supply headphones, listening posts and cassette players/recorders, therefore seems to indicate extensive use of auditory stimulus.
2. Teacher-oriented slide showings (class groups).

CASE STUDY E

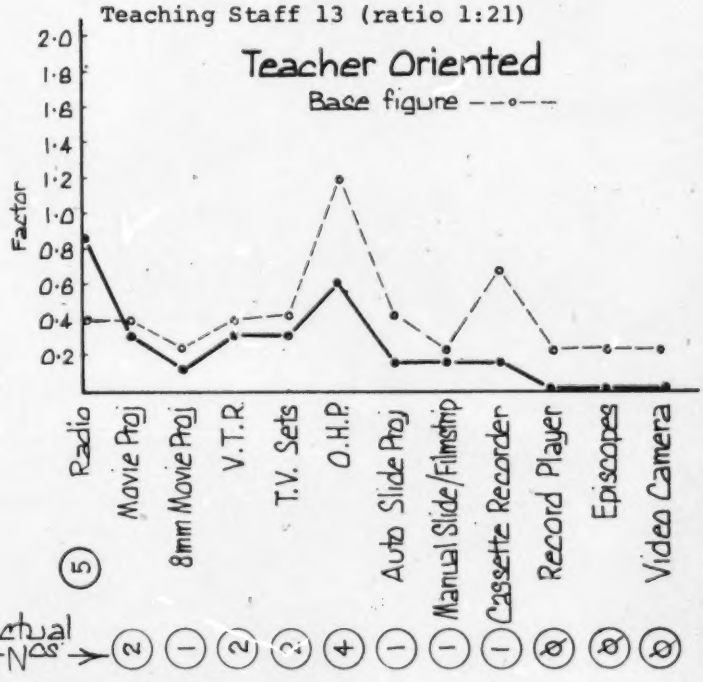
Country Area School
(Incorporates junior primary, primary and secondary)
472 km from Adelaide

District: Population approximately 700.
Nearest large centre of population for shopping etc., 120 km, public transport available to nearest large centres (bus and infrequent rail). Bus to capital.
Rural economy - cereal crops, mixed farms. No local radio or T.V. but able to receive commercial and A.B.C. T.V. (1 of each) and radio (2 commercial, 1 A.B.C.) from larger city. T.V. via translator stations.

Students 273



Teaching Staff 13 (ratio 1:21)



Actual Nos.

Deficiencies Below Norm

35mm projectors, cassette recorders (marginal), cassette players, slide viewers, no language master.

16mm & 8mm projectors (both marginal), V.T.R. (marginal), T.V. sets, O.H.P., 35mm auto & manual projectors, cassette recorders, no stereo recorder player, epidiascope or video camera.

Excesses Above Norm

Equal to norm for listening posts and daylight screens. Above in headphones.

Radio (twice norm).

Comments

1. Both graphs almost parallel but below norm.
2. Good supply headphones, listening posts, radio - indicates high use of auditory stimulus.
3. Reliance on pre-recorded or "off-air" T.V. programmes (ABC)

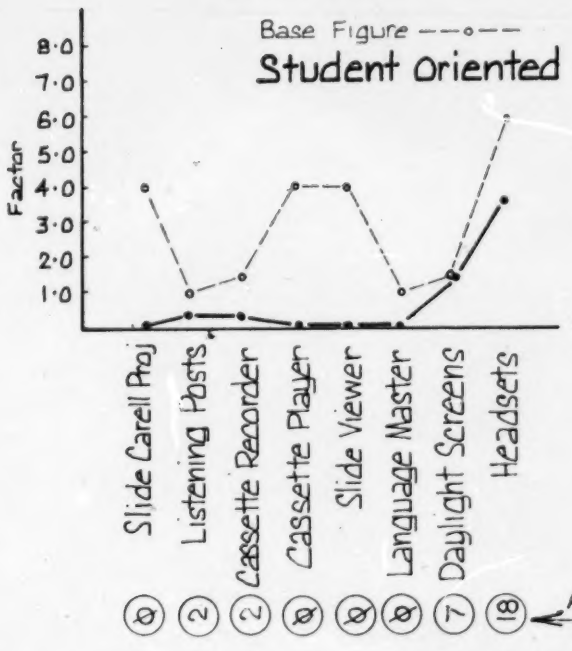
CASE STUDY F

A country high school in a large centre of population
(about 2,000 population)

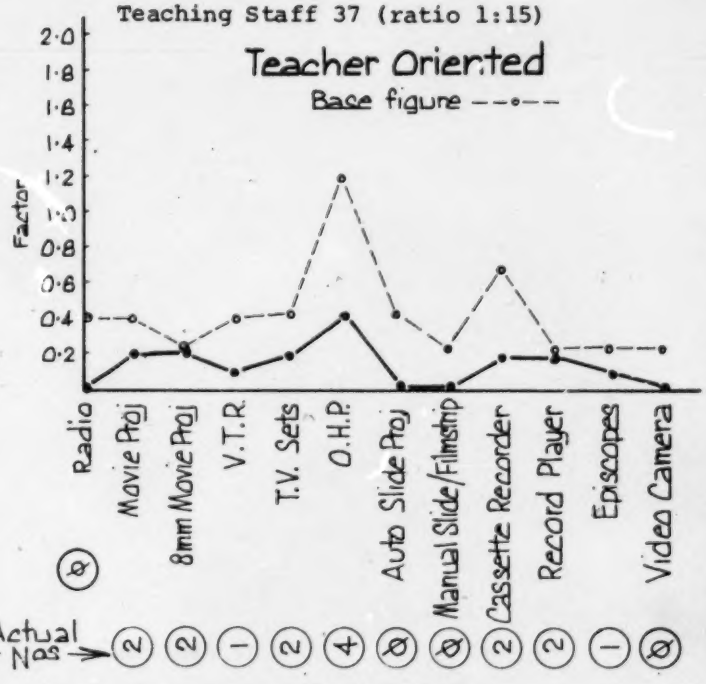
147 km from Adelaide

District: Three large centres of population close to each other of which this is one (populations: 2200; 2000; 1200).
Well-served by rail and road transport to capital. Tourist centre.
Mining carried out on a small scale. Tourist "festivals" held annually. Area is predominantly working class.

Students 566



Teaching Staff 37 (ratio 1:15)



Actual Nos

Deficiencies Below Norm

All categories.

Radio (none), 16mm & 8mm projectors (marginal), V.T.R., T.V. receivers/ monitors, O.H.P., no 35mm projectors, cassette recorders, epidiascope, video camera.

Excesses Above Norm

= norm daylight screens.

Nil.

Comments

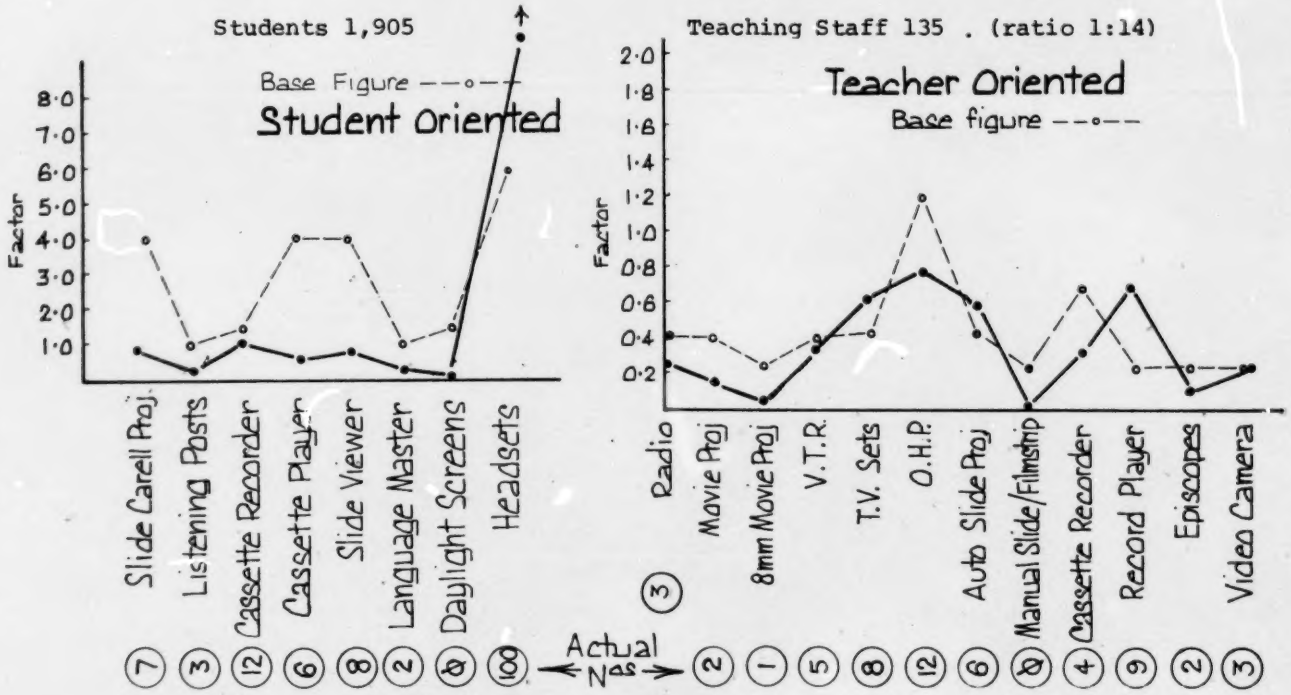
1. No radio - cannot take "off-air" broadcasts & has limited capacity to facilitate use of recordings from central supply.
2. No slide projectors, no 35mm small projectors or slide viewers - indicates lack of and/or lack of emphasis on use of slides.
3. Limited T.V. & O.H.P. - both visual & auditory stimuli therefore severely handicapped.
4. No video camera - therefore must rely on T.V. programmes & pre-recorded tapes.

CASE STUDY G

Secondary in a newly-developed and rapidly-growing suburb.
Original school established 1966

25 km from Adelaide

District: Outer metropolitan residential; excellent public transport (bus, train, co-ordinated bus-train) to capital; excellent arterial road system; lighter industries on outskirts; "middle class" area; close to beach.



Deficiencies Below Norm

All categories with exception headphones.

Radio, 16mm & 8mm projectors, V.T.R. (marginal), O.H.P., no 35mm manual projectors, epidiascope (marginal) video camera (marginal).

Excesses Above Norm

Headphones.

T.V., 35mm auto (marginal), stereo recorder player.

Comments

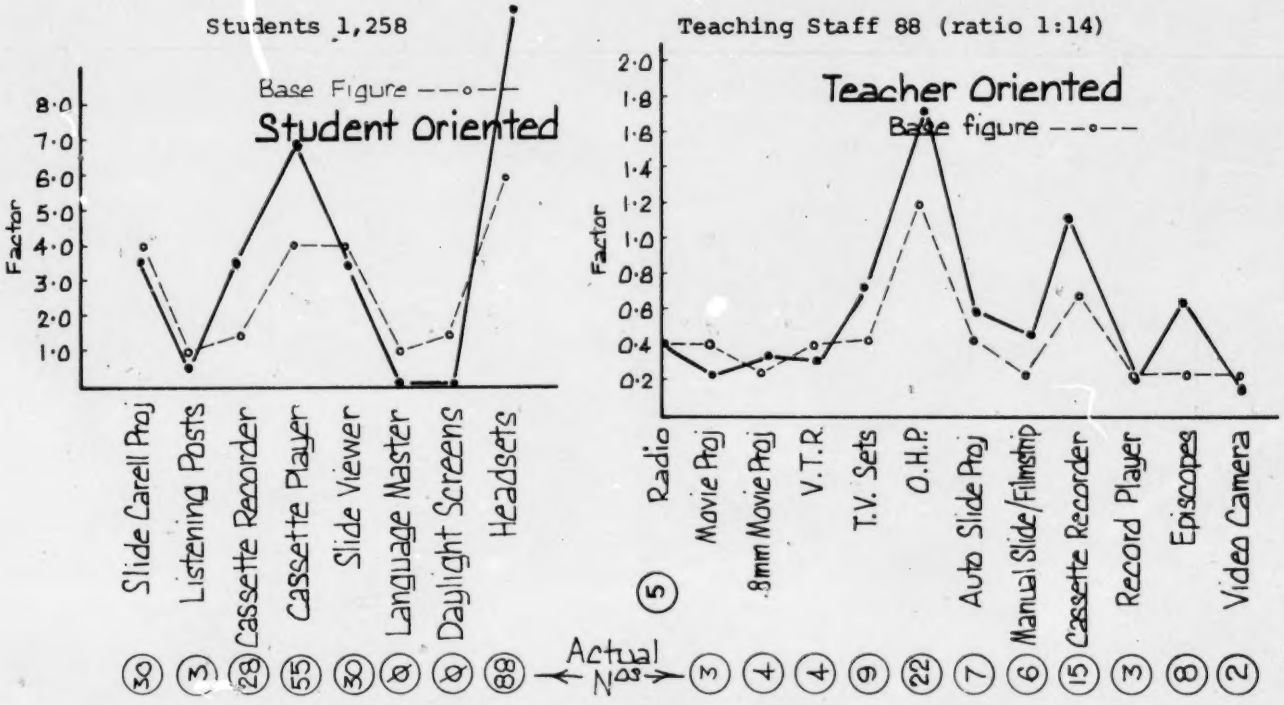
1. Appear to rely on auditory and visual stimuli.
2. Tends to teacher-oriented equipment (above norm in 3 cases, marginally below in 3).
3. Puzzling that good supply of headphones, yet ancilliary equipment below norm.

CASE STUDY H

New secondary (est. 1973) open plan

20 km from Adelaide

District: Outer metropolitan residential; only industries are shops and household service industries (T.V. repair, lawn cutting). Higher than average number of British migrants. 1 hotel, 1 licensed store, 1 licensed club), several churches, general practitioners.
Teenage vandalism higher than average.
Excellent bus service.



Deficiencies Below Norm

35mm projectors (marginal), listening posts, slide viewers (marginal), no daylight screens or language masters.

16mm projectors, V.T.R. (marginal), video camera (marginal).

Excesses Above Norm

cassette recorders, above cassette players, well above headphones.

8mm projectors, T.V. sets (almost double). O.H.P. (well above), 35mm auto (marginal), well above in 35mm manual projectors, well above in cassette recorders, normal supply of stereo record players, well above in episcopes.

Comments

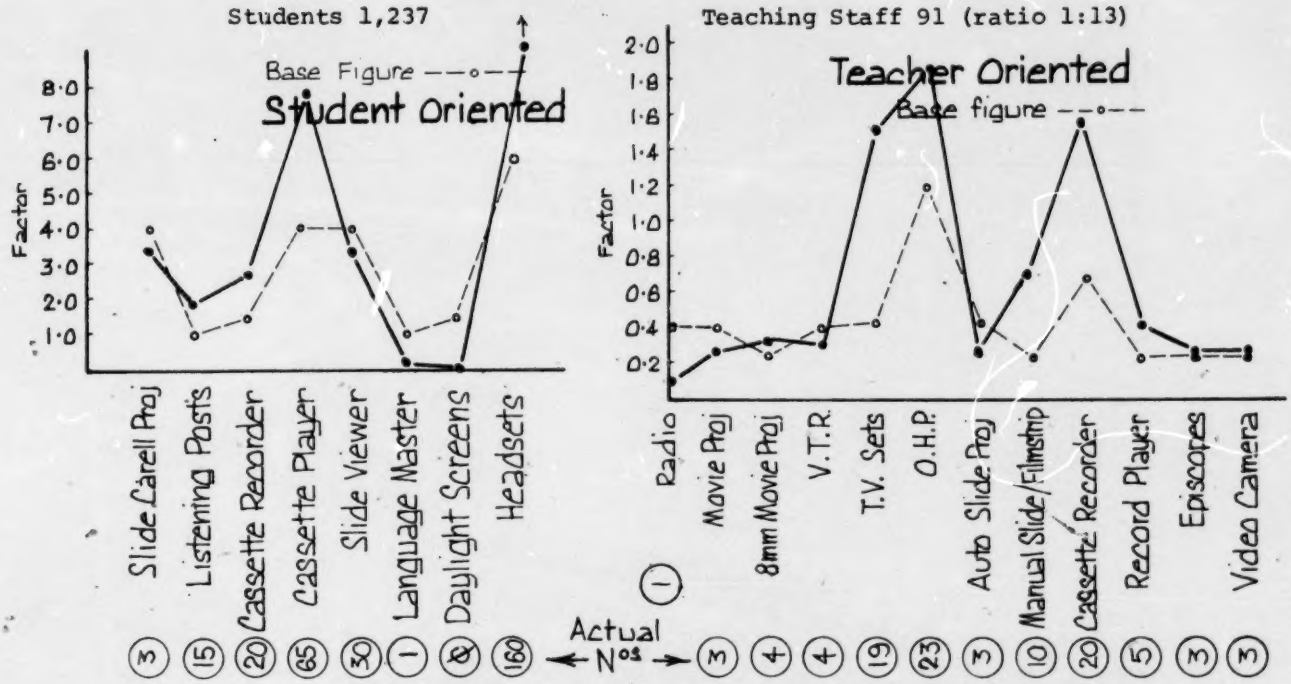
1. Interesting to noteno daylight screens with high number of projectors.
2. Neither medium given preference.
3. Greater than normal requirement for 8mm equipment - would possibly indicate a teacher with an interest in this field.
4. Plentiful supply of equipment for student use.

CASE STUDY J

Modern design, open plan secondary
Established 1974-75.

18 km from Adelaide

District: "Middle class" new suburban residential. Similar to "H".



Deficiencies Below Norm

35mm projectors (marginal), slide viewers (marginal), language masters, no daylight screens, headphones.

Well down for radio, 16mm projectors, V.T.R. (marginal), 35mm auto, epidiascope and video camera (both marginally).

Excesses Above Norm

Double N in listening posts, above in cassette recorders, cassette players.

T.V. sets, extra O.H.P., 35mm manual Proj, cassette recorders, stereo record players.

Comments

1. High number of cassette players/recorders does not correlate with low number of heaphones.
2. Rely on visual medium - shown by high number of T.V. sets, O.H.P., slide viewers, 35mm projectors.
3. Low number of radios seems to indicate a reliance on pre-recorded tapes (rather than taping direct).